Lamotrigine (Lamictal®)

This sheet is about exposure to lamotrigine in pregnancy and while breastfeeding. This information should not take the place of medical care and advice from your healthcare provider.

What is lamotrigine?
Lamotrigine is a medication that is used to treat some types of epilepsy (medical condition that causes seizures). It is also used to treat bipolar disorder. A common brand name for lamotrigine is Lamictal®.

I take lamotrigine. Can it make it harder for me to get pregnant?
Having a seizure disorder, as well as long-term use of seizure medications, might be associated with irregular periods and hormonal disorders which could lead to a harder time getting pregnant (infertility). Many people have become pregnant while taking lamotrigine, but one study suggested this medication might make it harder for people who take it to get pregnant.

I just found out I am pregnant. Should I stop taking lamotrigine?
Talk with your healthcare providers before making any changes to how you take this medication. Having a seizure while pregnant could be harmful to a pregnancy. People who have bipolar disorder and stop taking their medication are at increased risk for episodes of depression or mania that may be harmful to both the person who is pregnant and the baby. For general information on depression in pregnancy, please see the MotherToBaby Depression fact sheet here: https://mothertobaby.org/fact-sheets/depression-pregnancy/. People with seizure disorders or psychiatric disorders who could become pregnant should discuss their options for treatment, including medications, with their healthcare providers before becoming pregnant when possible.

What else should I know about taking lamotrigine during pregnancy?
Lamotrigine is cleared from the body faster during pregnancy. This means that many people who are pregnant need to increase their dose of lamotrigine to keep the medication at the right level to work for them. Your healthcare provider can order blood tests to check the levels of medication. People who need to increase the dose of lamotrigine during pregnancy will also need to work with their healthcare providers after the baby is born to reduce their medication dose.

Does taking lamotrigine increase the chance for miscarriage?
Miscarriage is common and can occur in any pregnancy for many different reasons. Studies have not found that lamotrigine is associated with a higher chance for miscarriage over the background risk.

Does taking lamotrigine increase the chance of birth defects?
Every pregnancy starts out with a 3-5% chance of having a birth defect. This is called the background risk. Several studies looking at several thousand pregnancies have found no increase in birth defects when lamotrigine is taken during pregnancy. One study suggested a less than 1% increase in oral clefts (the lip and/or roof of the baby's mouth do not form correctly and need surgery to repair after birth), but this finding was not confirmed by other studies. The use of more than one seizure medication, in particular valproic acid along with lamotrigine, appears to be associated with an increased chance of birth defects.

Could taking lamotrigine cause other pregnancy complications?
Lamotrigine has not been associated with an increased chance for other pregnancy complications, such as preterm delivery (birth before week 37) or poor growth of the baby (small size, low birth weight, or head circumference).

I need to take lamotrigine throughout my entire pregnancy. Will it cause withdrawal symptoms in my baby after birth?
There are not enough studies looking at this question to know if lamotrigine causes withdrawal.

Does taking lamotrigine in pregnancy affect future behavior or learning for the child?
Several studies have looked at the development of babies who were exposed to lamotrigine during pregnancy. Most of these studies did not find differences in behavior or learning between babies exposed to lamotrigine and those who were not.

Breastfeeding while taking lamotrigine:
Lamotrigine can get into breast milk. Lamotrigine then gets into the baby's body if they are breastfeeding, often at levels that are similar to the parent's levels. Most infants who are breastfed by someone taking lamotrigine are not expected to have side effects. However, there have been case reports of breastfed infants with breathing problems and anemia (low red blood cell counts). People who are taking lamotrigine and nursing their child can watch for possible side effects, such as trouble breathing, a rash, sleepiness, or poor sucking. If the baby develops a rash, or other symptoms, talk with your healthcare providers right away about if you should discontinue breastfeeding, as a rash could be a sign of toxicity. This is especially true for small, sick, or premature babies. If you notice anything unusual in your nursing infant, discuss the symptoms with your child's healthcare provider. The product label for lamotrigine recommends that people use caution when using this medication during breastfeeding. However, the benefit of using lamotrigine may outweigh possible risks. Be sure to talk to your healthcare provider about your breastfeeding questions. If your lamotrigine dose was increased during pregnancy, work with your health care provider to lower it soon after delivery.

If a male takes lamotrigine could it affect fertility (ability to get partner pregnant) or increase the chance of birth defects? Studies have shown that men with seizure disorders or bipolar disorder may have lower fertility (make it harder for them to get their partner pregnant). Based on a small number of studies, lamotrigine does not seem to affect sperm counts, motility (movement of the sperm), or sex hormones in men. In general, exposures that fathers or sperm donors have are unlikely to increase risks to a pregnancy. For more information, please see the MotherToBaby fact sheet on Paternal Exposures at https://mothertobaby.org/fact-sheets/paternal-exposures-pregnancy/.

National Pregnancy Registry for Psychiatric Medications: *There is a pregnancy registry for people who take psychiatric medications, such as lamotrigine. For more information you can look at their website: https://womensmentalhealth.org/research/pregnancyregistry/.*

North American Antiepileptic Drug (AED) Pregnancy Registry: *There is a pregnancy registry for people who take antiepileptic medications, such as lamotrigine. For more information you can look at their website: http://www.aedpregnancyregistry.org/.*

Selected References:

- Almgren M, et al. 2009. Population-based study of antiepileptic drug exposure in utero--influence on head circumference in newborns. Seizure. 18(10):672-5.
- Arfman IJ, et al. 2020. Therapeutic Drug Monitoring of Antiepileptic Drugs in Women with Epilepsy Before, During, and After Pregnancy. Clin Pharmacokinet. 59(4):427-445.
- Asranna A, et al. 2018. Do Anti-Epileptic Drug modifications after first trimester of pregnancy influence fetal malformation or cognitive outcome?. Epilepsy research. 146: 121-25.
- Ban L, et al. 2015. Congenital anomalies in children of mothers taking antiepileptic drugs with and without periconceptional high dose folic acid use: a population-based cohort study. PLoS One. 10: e0131130.
- Bech, LF, et al. 2018. In utero exposure to antiepileptic drugs is associated with learning disabilities among offspring. Journal of Neurology, Neurosurgery & Psychiatry. 89(12): 1324-31.
- Birnbaum AK, et al. 2020. Antiepileptic drug exposure in infants of breastfeeding mothers with epilepsy. JAMA neurology. 77(4): 441-50.
- Blotière PO, et al. 2019. Risks of 23 specific malformations associated with prenatal exposure to 10 antiepileptic drugs. Neurology. 93(2): e167-80.
- Borthen I. 2015. Obstetrical complications in women with epilepsy. Seizure. 28: 32-34.
- Bromley RL, et al. 2013. The prevalence of neurodevelopmental disorders in children prenatally exposed to antiepileptic drugs. Journal of Neurology, Neurosurgery & Psychiatry. 84(6): 637-43.
- Bromley RL, et al. 2018. Fetal antiepileptic drug exposure and cognitive outcomes. Seizure. 44:225–31.
- Clark CT, Wisner KL. 2018. Treatment of Peripartum Bipolar Disorder. Obstet Gynecol Clin North Am. 45(3):403-17.
- Cohen-Israel M, et al. 2018. Short-and long-term complications of in utero exposure to lamotrigine. British Journal of Clinical Pharmacology. 84(1): 189-94.
- Cummings C, et al. 2011. Neurodevelopment of children exposed in utero to lamotrigine, sodium valproate and carbamazepine. Archives of disease in childhood, 96(7): 643-47.
- Deshmukh U, et al. 2016. Behavioral outcomes in children exposed prenatally to lamotrigine, valproate, or carbamazepine. Neurotoxicol Teratol. 54:5–14.
- Diav-Citrin O, et al. 2017. Is it safe to use lamotrigine during pregnancy? A propective comparative observational study. Birth Defects Res. 109:1196-1203.
- Dolk H, et al. 2008. Does lamotrigine use in pregnancy increase orofacial cleft risk relative to other malformations? Neurology; 71:714-722.
- Dolk H, et al. 2016. Lamotrigine use in pregnancy and risk of orofacial cleft and other congenital anomalies. Neurology; 86(18):1716-25.
- Gerard EE, et al. 2015. An update on maternal use of antiepileptic medications in pregnancy and neurodevelopment outcomes. Journal of Pediatric Genetics. 4(2): 94-110.
- Gómez-Ramiro M, et al. 2019. Adverse outcomes during pregnancy and major congenital malformations in infants of patients with bipolar and schizoaffective disorders treated with antiepileptic drugs: A systematic review. Psychiatr. Pol. 53(2): 223-44.
- Harden CL, et al. 2009. Practice parameter update: management issues for women with epilepsy—focus on pregnancy (an evidence-based review): vitamin K, folic acid, blood levels, and breastfeeding: report of the Quality Standards Subcommittee and Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology and American Epilepsy Society. Neurology. 73:142–9.
- Hernandez-Diaz S, et al. 2017. Fetal growth and premature delivery in pregnant women on antiepileptic drugs. Ann Neurol. 82(3):457-65.
- Herzog AG, 2008. Disorders of reproduction in patients with epilepsy: primary neurological mechanisms. Seizure. 17(2): 101-10.
- Holmes LB, et al. 2011. Fetal effects of anticonvulsant polytherapies. Arch Neurol; 68(10):1275-1281.

- Husebye ES, et al. 2018. Verbal abilities in children of mothers with epilepsy: association to maternal folate status. Neurology. 91: e811-21.
- Jazayeri D, et al. 2018. Outcomes of pregnancies in women taking antiepileptic drugs for non-epilepsy indications. Seizure. 56: 111-14.
- Kacirova I, et al. 2019. A Short Communication: Lamotrigine Levels in Milk, Mothers, and Breastfed Infants During the First Postnatal Month. Therapeutic drug monitoring. 41(3): 401-4.
- Khan SJ, et al. 2016. Bipolar Disorder in Pregnancy and Postpartum: Principles of Management. Curr Psychiatry Rep; 18(2):13.
- Kuczynska J, et al. 2019. Comparison of plasma, saliva, and hair lamotrigine concentrations. Clinical Biochemistry. 74: 24-30.
- MacEachern DB, et al. 2019. Infertility, impaired fecundity, and live birth/pregnancy ratio in women with epilepsy in the USA: Findings of the Epilepsy Birth Control Registry. Epilepsia, 60(9): 1993-98.
- McVearry KM, et al. 2009. A prospective study of cognitive fluency and originality in children exposed in utero to carbamazepine, lamotrigine, or valproate monotherapy. Epilepsy Behav. 16(4):609-16.
- Meador K, et al. 2011. Foetal antiepileptic drug exposure and verbal versus non-verbal abilities at three years of age. Brain; 134:396-404.
- Meador KJ, et al, Neurodevelopmental Effects of Antiepileptic Drugs (NEAD) Study Group. 2014. Breastfeeding in children of women taking antiepileptic drugs: cognitive outcomes at age 6 years. JAMA Pediatr; 168(8):729-36.
- Montouris G, et al. 2005. Reproductive and sexual dysfunction in men with epilepsy. Epilepsy & Behavior. 7: 7-14.
- Mostacci B, et al. 2018. Emilia-Romagna study on pregnancy and exposure to antiepileptic drugs (ESPEA): a population-based study on prescription patterns, pregnancy outcomes and fetal health. J Neurol Neurosurg Psychiatry. 89:983–88.
- Neural tube defects. Practice Bulletin No. 187. American College of Obstetricians and Gynecologists. Obstet Gynecol. 2017. 130:e279–90.
- Newport DJ, et al. 2008. Lamotrigine in breast milk and nursing infants: determination of exposure. Pediatrics; 122(1):e223-31.
- Nordmo E, et al. 2009. Severe apnea in an infant exposed to lamotrigine in breast milk. Ann Pharmacother;43:1893-7.
- Ohman I, et al. 2000. Lamotrigine in pregnancy: pharmacokinetics during delivery, in the neonate, and during lactation. Epilepsia; 41:709-13.
- Pariente G, et al. 2017. Pregnancy Outcomes Following In Utero Exposure to Lamotrigine: A Systematic Review and Meta-Analysis. CNS Drugs. (6):439-450.
- Paulzen M, et al. 2015. Lamotrigine in pregnancy - therapeutic drug monitoring in maternal blood, amniotic fluid, and cord blood. Int Clin Psychopharmacol; 30(5):249-54.
- Prakash C, et al. 2016. Maternal and Fetal Outcomes After Lamotrigine Use in Pregnancy: A Retrospective Analysis from an Urban Maternal Mental Health Centre in New Zealand. Psychopharmacol Bull; 46(2):63-9.
- Razaz N, et al. 2017. Association between pregnancy and perinatal outcomes among women with epilepsy. JAMA Neurology. 74(8): 983-91.
- Richards N, et al. 2019. Developmental outcomes at age four following maternal antiepileptic drug use. Epilepsy & Behavior. 93: 73-9.
- Rihtman T, et al. 2013. Developmental outcomes at preschool age after fetal exposure to valproic acid and lamotrigine: Cognitive, motor, sensory and behavioral function. Reprod Toxicol. 41:115–25.
- Semet M, et al. 2017. The impact of drugs on male fertility: a review. Andrology. 5(4): 640-63.
- Thomas SV, et al. 2017. Malformation risk of antiepileptic drug exposure during pregnancy in women with epilepsy: results from a pregnancy registry in South India. Epilepsia. 58:274–81.
- Tomson T, et al. 2011. Dose-dependent risk of malformations with antiepileptic drugs: an analysis of data from the EURAP epilepsy and pregnancy registry. Lancet Neurol; 10(7):609-17.

- Tomson T, et al. 2018. Comparative risk of major congenital malformations with eight different antiepileptic drugs: a prospective cohort study of the EURAP registry. Lancet neurol. 17(6):530-8.
- Tomson T, et al. 2019. Declining malformation rates with changed antiepileptic drug prescribing: an observational study. Neurology. 93(9): e831-40.
- Vajda FJ, et al. 2013. Lamotrigine in epilepsy, pregnancy and psychiatry–a drug for all seasons? Journal of clinical neuroscience. 20(1): 13-16.
- Vajda FJ, et al. 2019. Antiepileptic drugs and foetal malformation: analysis of 20 years of data in a pregnancy register. Seizure. 65:6-11.
- Veiby G, et al. 2013. Early child development and exposure to antiepileptic drugs prenatally and through breastfeeding: A prospective cohort study on children of women with epilepsy. JAMA Neurol; 70:1367-74.
- Veiby G, et al. 2015. Epilepsy and recommendations for breastfeeding. Seizure; 28:57-65.
- Velez-Ruiz NJ, et al. 2015. Neurodevelopmental effects of fetal antiepileptic drug exposure. Drug safety. 38(3): 271-78.
- Veroniki AA, et al. 2017. Comparative safety of anti-epileptic drugs during pregnancy: a systematic review and network meta-analysis of congenital malformations and prenatal outcomes. BMC medicine. 15(1):95.
- Wakil L, et al. 2009. Neonatal outcomes with the use of lamotrigine for bipolar disorder in pregnancy and breastfeeding: a case series and review of the literature. Psychopharmacol Bull; 42:91-8.